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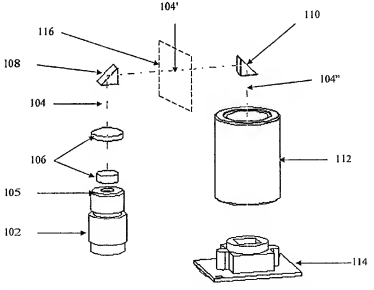
(54) **Title:** OPTICAL APPARATUS FOR MEASURING TOOLING POSITION WITHIN A SEAMING MACHINE



(57) **Abstract:** The present invention provides an optical device for measuring characteristics of toolings (116), especially chuck and roll in a seamer. The optical device comprises a radiation source (102) adapted to generate radiation, means (106, 108) for diverting the radiation so as to pass through a profile in the toolings (116), and a detector (114) adapted to receive the radiation that passed through the profile. The characteristics of the toolings (116) such as the profiles of a gap between the chuck and the roll, are processed from the detected radiation that passes through the profile.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

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1. A device for measuring profiles of a gap between a chuck and a roll in a seamer, said device comprising:

a radiation source adapted to generate radiation;

a plurality of means for diverting said radiation so as to pass through the gap between the chuck and the roll;

detector adapted to receive said radiation that passed through the profile;

whereby the profiles of the gap is processed from the detected radiation that passes through the profile.

2. The device as claimed in Claim 1, wherein said radiation is selected from a group consisting of electromagnetic radiation, light radiation or laser light.

3. The device as claimed in Claim 1, further comprising at least one beam expander so as to generate a coherent beam.

4. The device as claimed in Claim 3, wherein said at least one beam expander is comprised of two lenses that expand the beam with a minimal dissipation.

5. The device as claimed in Claim 1, wherein said means for diverting said radiation is selected from a group of diverters such as prism, mirror, lens, or fiber-optic.

6. The device as claimed in Claim 1, wherein said plurality of means for diverting the radiation is a first prism that diverts the radiation towards the profile and a second prism that diverts the radiation that passes through the profile.

7. The device as claimed in Claim 6, wherein said detector and said source are positioned side by side and said first prism and said second prism are positioned in a predetermined distance and opposite to one another so as to form a bypass of said radiation.

8. The device as claimed in Claim 1, further comprising a magnification system adapted to receive said radiation that passes through the profile and transfers it so as to hit said detector.

9. The device as claimed in Claim 1, wherein said detector is a CCD camera.

10. The device as claimed in Claim 1, wherein the profile to be measured is a distance between the chuck and the roll.

11. The device as claimed in Claim 1, wherein the profile to be measured is the clearance between the chuck and the roll.

12. A method for measuring profiles of a gap between a chuck and a roll in a seamer comprising:

providing a radiation source adapted to generate radiation;

providing a first means for diverting said radiation so as to pass through a profile;

providing a second means for diverting said radiation that passes through the profile;

directing the diverted radiation to a detector;

whereby the profile is processed from the detected radiation that passes through the profile.

13. The method as claimed in Claim 12, wherein said radiation is selected from a group consisting of electromagnetic radiation, light radiation or laser light.

14. The method as claimed in Claim 12, wherein said first means for diverting and said second means for diverting said radiation are selected from a group comprising diverters such as prism, mirror, lens, or fiber-optic.